

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

APPLERA CORPORATION, MDS INC., and
APPLIED BIOSYSTEMS/MDS SCIEX
INSTRUMENTS,

Plaintiffs,

v.

THERMO ELECTRON CORP.,
Defendant.

Civil Action No.: 04-1230 GMS

THERMO FINNIGAN LLC,
Plaintiff,

v.

APPLERA CORPORATION, MDS INC., and
APPLIED BIOSYSTEMS/MDS SCIEX
INSTRUMENTS,

Defendants.

Civil Action No.: 05-110 GMS

PROPOSED MARKMAN ORDER

This ___ day of February 2006, the Court having considered the parties' claim construction briefing and having conducted a Markman hearing on January 9, 2006;

IT IS ORDERED that:

The disputed claim terms of U.S. Patent No. 4,963,736 are construed as follows:

1. Comprising means including, but not limited to.
2. Vacuum chamber means a chamber maintained at less than atmospheric pressure.
3. First vacuum chamber means a vacuum chamber.
4. Second vacuum chamber means a vacuum chamber coming after, in the path of ion travel, the first vacuum chamber.

5. First and second chambers separated by a wall means that a wall defines a common boundary of each of the first and second vacuum chambers.
6. An interchamber orifice located in said wall means an opening in the wall that connects the first and second vacuum chambers.
7. First and second spaces . . . separated by an interchamber orifice means that an opening is located at a common boundary of each of the first and second spaces.
8. Inlet orifice means an orifice that provides an inlet into the first vacuum chamber for the passage of ions and neutral gas molecules.
9. Means for generating ions of a trace substance to be analyzed is a means-plus-function limitation subject to 35 U.S.C. § 112, ¶ 6. The function is generating ions of a trace substance to be analyzed. The corresponding structure is an electric discharge needle, electrospray source, or other ionization source operating at approximately atmospheric pressure that is not after-developed technology.
10. Trace substance means matter that is present in a small amount or as a small fraction of a sample.
11. Means . . . for directing said ions through said ions through said ions through said inlet orifice into said first vacuum chamber is a means-plus-function limitation subject to 35 U.S.C. § 112, ¶ 6. The function is directing said ions through said inlet orifice into said vacuum chamber. The corresponding structures include “curtain gas plate **22**,” “orifice plate **28**,” and “rod set **32**.”
12. Rod set means a number of rods of the same kind that belongs or are used together. This is in accordance with the meaning of “set,” which means a number of things of the same kind that belong or are used together.

13. Rod means a “slender bar” that is, in accordance with the meaning of “slender,” narrow in circumference in proportion to its length, and substantially longer than it is wide.
14. Second rod set means a rod set coming after, in the path of ion travel, the first rod set.
15. Extending along at least a substantial portion of the length of said first vacuum chamber means having a length extending at least most of the length of the first vacuum chamber.
16. Elongated means stretched out and having a form notably long in comparison to its width.
17. Parallel rod means means rod means that extend in the same direction and everywhere equidistant.
18. Rod means in claim 1 is a means-plus-function limitation subject to 35 U.S.C. § 112, ¶ 6.
The function is to define an elongated space therebetween. The corresponding structures are four 15-cm quadrupole mass spectrometer rods that are not too short as described in the specification.
19. Spaced laterally apart means that the rod means are separated by a distance substantially less than the length of each elongated rod.
20. Space . . . extending longitudinally means space that runs lengthwise down the rods, and that is longer than it is wide.
21. Rod means in claim 14 has the same meaning as “rod means” in claim 1, except that the function here is defining longitudinally extending first and second spaces, respectively.
22. Longitudinally extending . . . space means space that runs lengthwise down the rods, and that is longer than it is wide.
23. First space means a space.
24. Second space means a space coming after, in the path of ion travel, the first space.

25. Aligned means being in or coming into precise adjustment or correct relative position.
26. Means for applying essentially an AC-only voltage between the rod means of said first rod set so that the first rod set may guide ions through said first space in claim 1 is a means-plus-function limitation subject to 35 U.S.C. § 112, ¶ 6. The function is applying essentially an AC-only voltage between the rod means of said first rod set so that the first rod set may guide ions through said first space. Although the specification discloses rods between which AC voltage is applied, the specification does not disclose any structure for applying essentially an AC-only voltage between the rod means. Hence, the specification does not disclose the corresponding structure required for construction of this limitation under § 112, ¶ 6. This limitation and claim 1 are therefore indefinite.
27. Essentially an AC-only voltage between the rod means means a voltage between the rod means that is essentially AC-only and that lacks any placed DC component that would cause the rod set to act as a mass filter.
28. Guide ions through means ions are guided through the first space.
29. Placing an essentially AC-only RF voltage between the rod means means placing an RF voltage between the rod means that is an essentially AC-only RF voltage and that lacks any placed DC component that would cause the rod set to act as a mass filter.
30. Means for applying both AC and DC voltages between the rod means of said second rod set so that said second rod set may act as a mass filter for said ions is a means-plus-function limitation subject to 35 U.S.C. § 112, ¶ 6. The function is applying both AC and DC voltages between the rod means of said second rod set so that said second rod set may act as a mass filter for said ions. Although the specification discloses rods between which AC and DC voltages are applied, the specification does not disclose any structure

for applying both AC and DC voltages between the rod means. Hence, the specification does not disclose the corresponding structure required for construction of this limitation under § 112, ¶ 6. This limitation and claim 1 are therefore indefinite.

31. Mass filter means a device that passes through ions of one or more select mass-to-charge ratios while filtering out ions of all other mass-to-charge ratios, and which does not function as an ion trap.
32. Means for flowing gas through said inlet orifice into said first space is a means-plus-function limitation subject to 35 U.S.C. § 112, ¶ 6. The function is to flow gas through said inlet orifice and into said first space. The corresponding structures include “curtain gas source 42,” “duct 44 to the curtain gas chamber 24,” “curtain gas chamber 24,” “orifice plate 28,” “orifice 26,” “vacuum pump 31,” “and “vacuum chamber 30.”
33. Very low pressure means the pressure in the second chamber is at least below 1×10^{-5} torr.
34. A substantially lower pressure means the pressure in the second chamber is at least below 1×10^{-5} torr.
35. The length of said first rod set means the length of the rods in the direction of the longitudinal axis.
36. Equal to or greater than 2.25×10^{-2} means the product of the pressure in the first vacuum chamber and the length of the rods in the first rod set must be equal to or greater than 2.25×10^{-2} torr cm.
37. Means for maintaining the kinetic energies of ions moving from said inlet orifice to said first rod set at a relatively low level is a means-plus-function limitation subject to 35 U.S.C. § 112, ¶ 6. The function is maintaining the kinetic energy of ions moving from

said inlet orifice to said first rod set at a relatively low level. The corresponding structures include “curtain gas plate 22,” “orifice plate 28,” and “rod set 32.”

38. Kinetic energy of ions means energy associated with the motion of ions.
39. Relatively low level means the level or value of kinetic energy below the level at which the ion signal is reduced by further increases of the kinetic energy.
40. Improved transmission of ions through said interchamber orifice means transmission of [said] ions that is better than that which would occur at a pressure-times-length value for the first chamber and first rod set below 2.25×10^{-2} torr cm.
41. Directing said ions through an inlet orifice in an inlet wall into said first space, first through said first space, said interchamber orifice and then through said second space, and then detecting the ions which have passed through said second space, to analyze said substance means ions traveling on the recited path through an inlet wall, the first space, interchamber orifice, and second space must be detected to analyze the substance.

The disputed claim terms of U.S. Patent No. 6,528,784 are construed as follows:

1. Mass analyzer means any device usable either to deliver ions to another structure selectively, or to detect ions selectively, based on ion mass-to-charge ratios.
2. Adduct ion(s) means an ion formed by combining two or more different kinds of particles, usually an ion and a molecule.
3. Multiple ion guide means a device that confines ions radially and guides them along an extended longitudinal path, as determined by multipolar electric and/or magnetic fields.
4. Mass analyzer chamber means the high vacuum chamber that houses the mass analyzer.
5. Means associated with one or both of said first and second multipole ion guides for increasing the translational kinetic energy of the adduct ions so that at the vacuum

pressure of the second interface chamber adduct ions traveling into the chamber are converted into sample ions without fragmentation of sample ions is a means-plus-function limitation subject to 35 U.S.C. § 112, ¶ 6. The function is increasing the translational kinetic energy of the adduct ions so that at the vacuum pressure of the second interface chamber adduct ions traveling into the chamber are converted into sample ions without fragmentation of sample ions. The corresponding structures described in the specification include a skimmer **24** that precedes the first ion guide **27**, a lens **18** located between the first and second ion guides **27** and **28**, and their associated voltage sources.

6. Associated with one or both of said first and second multipole ion guides means that the “means for . . . increasing” has a relation to either or both of the first and second multipole ion guides.
7. Whereby to increase the sample ion current and therefore the sensitivity of the mass spectrometer system in claim 1 means the sensitivity of the mass spectrometer system is increased because the flow of sample ions is increased relative to the flow of sample ions in the absence of dissociation of adduct ions at the pressure of the second chamber.
8. To increase the sample ion current and therefore the sensitivity of the mass spectrometer system in claim 4 means the sensitivity of the mass spectrometer system is increased because the flow of sample ions is increased relative to the flow of sample ions in the absence of dissociation of adduct ions at the pressure of the second chamber.
9. Applying a DC offset voltage between a selected one or both lenses and the succeeding multipole ion guide means supplying a DC voltage such that there is a voltage difference between at least one of the lenses and the ion guide that comes after them.

10. Ion lens means a device to which one or more voltages are applied so that the device deflects ions and may be used to focus or otherwise to change the shape or direction of an ion beam without continuously confining the ions radially along an extended longitudinal path.
11. A DC offset voltage . . . having an amplitude so as to provide translational kinetic energy to said adduct ions to dissociate the adduct ions without dissociating the sample ions at the pressure of the second chamber means one or more DC offset voltages provides translational kinetic energy such that, at the vacuum pressure of the second chamber, adduct ions that have entered the second chamber are broken up to form additional sample ions without fragmentation of sample ions.

The Honorable Gregory M. Sleet
United States District Judge